

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. A method comprising:

receiving one of a caution alert or a warning alert from a warning system;

5 waiting a predefined period of time for positive flight control input by the flight crew; and

initiating auto-recovery if no positive flight control input has been performed at time of expiration of the waiting period.

2. The method of Claim 1, wherein initiating auto-recovery includes increasing flight
10 path angle by 2° if a caution alert is received.

3. The method of Claim 2, wherein initiating auto-recovery includes increasing flight path angle by an additional 2° if the caution alert remains after expiration of an additional waiting period.

4. The method of Claim 1, wherein initiating auto-recovery includes increasing flight
15 path angle by 6° if a warning alert is received.

5. The method of Claim 1, wherein initiating auto-recovery includes analyzing two or more auto-recovery routes relative to one or more of a terrain database, an airport database, an obstacles database, or a special-use airspace database.

6. The method of Claim 5, wherein analyzing possible recovery routes includes:
20 selecting the first analyzed route that is determined to clear the caution or warning alert.

7. The method of Claim 5, wherein analyzing possible recovery routes includes automatically selecting the recovery route determined to have the best climb gradient.

8. The method of Claim 1, wherein initiating auto-recovery includes sending flight instructions to an autopilot system.

5 9. The method of Claim 1, wherein initiating auto-recovery includes sending control signals to a fly-by-wire system.

10. The method of Claim 1, wherein initiating auto-recovery includes sending control signals to flight control actuators.

10 11. The method of Claim 1, wherein initiating auto-recovery includes sending control signals to a stick-pusher.

12. The method of Claim 1, wherein the warning system includes an Enhanced Ground Proximity Warning System.

13. The method of Claim 1, wherein the warning system includes an Enhanced Ground Proximity Warning System and a Protected Airspace Alerting System.

15 14. A system comprising:
a means for receiving one of a caution alert or a warning alert from a warning system;
a means for waiting a predefined period of time for positive flight control input by the flight crew; and
20 a means for initiating auto-recovery if no positive flight control input has been performed at time of expiration of the waiting period.

15. The system of Claim 14, wherein the means for initiating auto-recovery includes a means for analyzing two or more auto-recovery routes relative to one or more of a terrain database, an airport database, an obstacles database, or a protected airspace database.

16. The system of Claim 15, wherein the means for analyzing possible recovery routes includes a means selecting the first analyzed recovery route that is determined to clear the caution or warning alert.

17. The system of Claim 15, wherein the means for analyzing possible recovery routes includes a means for automatically selecting the recovery route determined to have the best climb gradient.

18. The system of Claim 14, wherein the means for initiating auto-recovery includes a means for increasing flight path angle by 2° if a caution alert is received.

19. The system of Claim 18, wherein the means for initiating auto-recovery includes a means for increasing flight path angle by an additional 2° if the caution alert remains after expiration of an additional waiting period.

20. The system of Claim 14, wherein the means for initiating auto-recovery includes a means for increasing flight path angle by 6° if a warning alert is received.

21. The system of Claim 14, wherein the means for initiating auto-recovery includes a means for sending flight instructions to an autopilot system.

22. The system of Claim 14, wherein the means for initiating auto-recovery includes a means for sending control signals to a fly-by-wire system.

23. The system of Claim 14, wherein the means for initiating auto-recovery includes a means for sending control signals to flight control actuators.

24. The system of Claim 14, wherein the means for initiating auto-recovery includes a means for sending control signals to a stick-pusher.

25. The system of Claim 14, wherein the warning system includes an Enhanced Ground Proximity Warning System.

5 26. The system of Claim 14, wherein the warning system includes an Enhanced Ground Proximity Warning System and a Protected Airspace Alerting System.

27. An apparatus for performing auto-recovery for an aircraft, the aircraft includes position and information systems and an automatic flight control system, the apparatus comprising:

10 memory for storing terrain data, airport data, obstacle data, and protected airspace data; and

a processor coupled to the memory, the position and information systems, and the automatic flight control system, the processor comprising:

15 a component for determining if one of a caution alert or a warning alert exists based on data stored in the memory and information received from the position and information systems;

a component for waiting a predefined period of time for positive flight control input by the flight crew; and

20 a component for generating an auto-recovery instruction and sending the generated auto-recovery instruction to the automatic flight control system if no positive flight control input has been performed at time of expiration of the waiting period.

28. The apparatus of Claim 27, wherein the component for generating an auto-recovery instruction includes a component for analyzing two or more auto-recovery routes relative to one or more of the terrain data, airport data, obstacles data, or protected airspace data.

29. The apparatus of Claim 28, wherein the component for analyzing possible recovery routes includes a component for selecting the first analyzed route that is determined to clear the caution or warning alert.

30. The apparatus of Claim 28, wherein the component for analyzing possible recovery routes includes a component for automatically selecting the recovery route determined to have the best climb gradient.

31. The apparatus of Claim 27, wherein the component for generating an auto-recovery instruction includes a component for initiating auto-recovery includes a means for increasing flight path angle by 2° if a caution alert is received.

32. The apparatus of Claim 31, wherein the component for generating an auto-recovery instruction includes a component for initiating auto-recovery includes a means for increasing flight path angle by an additional 2° if the caution alert remains after expiration of an additional waiting period.

33. The apparatus of Claim 27, wherein the component for generating an auto-recovery instruction includes a component for initiating auto-recovery includes a means for increasing flight path angle by 6° if a warning alert is received.

34. The apparatus of Claim 27, wherein the automatic flight control system includes an autopilot system.

35. The apparatus of Claim 27, wherein the automatic flight control system includes a fly-by-wire system.

36. The apparatus of Claim 27, wherein the automatic flight control system includes flight control actuators.

5 37. The apparatus of Claim 27, wherein the automatic flight control system includes a stick-pusher.

38. The apparatus of Claim 27, wherein the component for determining includes a component for setting an integrity flag high or low and wherein the component for generating sends the auto-recovery instructions to the automatic flight control system if the integrity flag
10 is set high.

39. The apparatus of Claim 38, wherein the component for setting an integrity flag sets the integrity flag based on validity information produced by the position and information systems and the memory.

40. A system for performing auto-recovery for an aircraft, the system comprising:
15 aircraft position and information systems;
an automatic flight control system;
memory comprising terrain data, airport data, obstacle data, protected airspace data and an auto-recovery computer program product; and
a processor coupled to the memory, the position and information systems, and the
20 automatic flight control system, the processor comprising:
a component for determining if one of a caution alert or a warning alert exists based on data stored in the memory and information received from the position and information systems; and

a component for generating an auto-recovery instruction and sending the generated auto-recovery instruction to the automatic flight control system if no positive flight control input has been performed at time of expiration of a waiting period.

5 41. The system of Claim 40, wherein the component for generating an auto-recovery instruction includes a component for analyzing two or more auto-recovery routes relative to one or more of the terrain data, airport data, obstacles data, or protected airspace data.

42. The system of Claim 41, wherein the component for analyzing possible recovery routes includes a component for selecting the first analyzed recovery route that is determined
10 to clear the caution or warning alert.

43. The system of Claim 41, wherein the component for analyzing possible recovery routes includes a component for automatically selecting the recovery route determined to have the best climb gradient.

44. The system of Claim 40, wherein the automatic flight control system includes an
15 autopilot system.

45. The system of Claim 40, wherein the automatic flight control system includes a fly-by-wire system.

46. The system of Claim 40, wherein the automatic flight control system includes flight control actuators.

20 47. The system of Claim 40, wherein the automatic flight control system includes a stick-pusher.

48. The system of Claim 40, wherein the component for determining includes a component for setting an integrity flag high or low and wherein the component for generating sends the auto-recovery instructions to the automatic flight control system if the integrity flag is set high.

5 49. The system of Claim 48, wherein the component for setting an integrity flag sets the integrity flag based on validity information produced by the position and information systems and the memory.

50. A computer program product residing on a computer readable medium for generating an auto-recovery instruction for an aircraft, the product comprising:

10 a component for determining if one of a caution alert or a warning alert exists based on one or more of terrain data, airport data, obstacle data, and protected airspace data stored in a memory, and information produced by aircraft position and information systems;

a component for waiting a predefined period of time for positive flight control

15 input by the flight crew;

a component for generating an auto-recovery instruction if no positive flight control input has been performed at time of expiration of the waiting period;

and

a component for sending the generated auto-recovery instruction to an automatic

20 flight control system.

51. The product of Claim 50, wherein the component for generating an auto-recovery instruction includes a component for analyzing two or more auto-recovery routes relative to one or more of the terrain data, airport data, obstacles data, or protected airspace data.

52. The product of Claim 51, wherein the component for analyzing possible recovery routes includes a component for selecting the first analyzed route that is determined to clear the caution or warning alert.

53. The product of Claim 51, wherein the component for analyzing possible recovery
5 routes includes a component for automatically selecting the recovery route determined to have the best climb gradient.

54. The product of Claim 50, wherein the component for generating an auto-recovery instruction includes a component for initiating auto-recovery includes a means for increasing flight path angle by 2° if a caution alert is received.

10 55. The product of Claim 54, wherein the component for generating an auto-recovery instruction includes a component for initiating auto-recovery includes a means for increasing flight path angle by an additional 2° if the caution alert remains after expiration of an additional waiting period.

56. The product of Claim 50, wherein the component for generating an auto-recovery
15 instruction includes a component for initiating auto-recovery includes a means for increasing flight path angle by 6° if a warning alert is received.

57. The product of Claim 50, wherein the component for determining includes a component for setting an integrity flag high or low and wherein the component for generating sends the auto-recovery instruction to the automatic flight control system if the integrity flag
20 is set high.

58. The product of Claim 57, wherein the component for setting an integrity flag sets the integrity flag based on validity information produced by the position and information systems and associated with the terrain data.